Wisconsin
Department of Commerce

Evaluation # 200245-I (Replaces 200225-I)

Safety & Buildings Division
201 West Washington Avenue
P.O. Box 2658
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Wisconsin
Building Products Evaluation

Material: Parex Standard Exterior Insulation and Finish System

Manufacturer:
Parex Incorporated
P.O. Box 189
Redan, Georgia 30074

SCOPE OF EVALUATION

GENERAL: This report evaluates the use of an exterior insulation system (EIFS) manufactured by Parex Incorporated. The exterior insulation system was evaluated for use over hourly-rated and non-rated combustible and noncombustible walls through a review of surface-burning characteristics, wind load resistance, as component of fire-resistive rated assembly and weathering data.

This review includes the cited requirement below in accordance with the current Uniform Dwelling Code **(UDC)** (for 1 & 2 family dwellings):

- **Foam Plastic:** The foam plastic insulation board used with Parex exterior insulation system (EIFS) AFM Expanded Polystyrene, Type WSG. The expanded polystyrene board was evaluated in accordance with the foam plastic requirements of **ss. Comm 21.11(1)**.

This review includes the cited requirements below in accordance with the **Wisconsin Building and Heating, Ventilating and Air conditioning Code applicable to buildings approved prior to July 1, 2002:**

- **Foam Plastic:** The foam plastic insulation board used with Parex exterior insulation system (EIFS) AFM Expanded Polystyrene, Type WSG. The expanded polystyrene board was evaluated in accordance with the foam plastic requirements of **ss. Comm 51.06(2)**, **(3)** and **(4)**.

- **Wind Load:** The Parex exterior insulation system (EIFS) was evaluated in accordance with the wind load requirements of **s. Comm 53.12**.
- **Fire-Resistive Assembly:** The Parex exterior insulation system (EIFS) was evaluated in accordance with the fire-resistive standards for materials of construction in accordance with the requirements of **ss. Comm 51.04**, **51.042(4)**, **(5)**, and **s. Comm 51.043**.

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This review indicates the cited **IBC** requirements below in accordance with the **Wisconsin Amended ICC 2000 Code**
(effective 7/01/02):

- **Foam Plastic:** The foam plastic insulation board used with Parex exterior insulation system (EIFS) AFM Expanded Polystyrene, Type WSG. The expanded polystyrene board was evaluated in accordance with the foam plastic requirements of **s. IBC 2603.1**, **2603.2**, **2603.3**, and **2603.4**.
- **Wind Load:** The Parex exterior insulation system (EIFS) was evaluated in accordance with the wind load requirements of **s. IBC 1609.1**. (See **LIMITATIONS OF APPROVAL** section)
- **Fire-Resistive Assembly:** The Parex exterior insulation system (EIFS) was evaluated in accordance with the fire-resistive standards for materials of construction in accordance with the requirements of **ss. IBC 703.2 [Comm 62.0703]**, **ss. IBC 2603.5**, **2603.5.1**, **2603.5.2**, **2603.5.4**, **2603.5.6**, and **2603.5.7**.
- **Weathering:** The Parex exterior insulation system (EIFS) was evaluated in accordance with the weathering requirements of **s. IBC 1403.2 Exception 2**.
- **Combustible Exterior Wall Covering:** The Parex exterior insulation system (EIFS) was evaluated in accordance with **s. IBC 1406.2**.
- **Ignition Resistance:** The Parex exterior insulation system (EIFS) was evaluated in accordance with **s. IBC 2603.5.7**. (See **TEST AND RESULTS** section on page #3)
- **Fire Separation 5 Feet or Less:** The Parex exterior insulation system (EIFS) was evaluated in accordance with **s. IBC 1406.2.1.1**. (See **TEST AND RESULTS** section on page #3)
- **Fire Separation Greater than 5 Feet:** The Parex exterior insulation system (EIFS) was evaluated in accordance with **s. IBC 1406.2.1.2**. (See **TEST AND RESULTS** section on page #3)

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DESCRIPTION AND USE

General: The Parex EIFS is a nonstructural exterior wall system consisting of the following components: acrylic resin-base, mixed with Portland cement as a base coat; expanded polystyrene insulation board; fiberglass mesh; acrylic resin-based finish and adhesive.

The base coat/adhesive composition is used as an adhesive to fasten the insulation board to the substrate. The base coat is applied to the face of the insulation board then fiberglass mesh is embedded into it. After 24 hours of drying time, one of the synthetic finish coats is applied. Application of these materials must be done when the ambient temperature is at or above 40^{o} F.

TESTS AND RESULTS

The tests and results listed below cover both the pre-July 1, 2002 **Wisconsin Building Code Comm** and current **IBC** requirements **(effective July 1, 2002):**

- Tensile Adhesion/Bond Strength Test per EIMA Test Method 101.03 "Standard Test Method for Determining the Tensile Adhesion Strength of an Exterior Insulation and Finish System (EIFS), Class PB", and **ASTM C 297**– on Parex Liquid Membrane / Adhesive LMA(395A) applied over Gypsum Wallboard Sheathing, Radco Report #2495:

  Results: the average maximum load of 422.53 pounds, average tensile strength 27.05 psi.

- Tensile Bond Strength Test on Parex Standard / Water Master System Exterior Insulation and Finish System (EIFS) per **ASTM C 297**, Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions, Radco Report #2882:

  Results: the average maximum load of 657.51 pounds, average tensile strength 41.47 psi.

- Tensile Adhesion/Bond Strength Test (before and after freeze thaw), per EIMA Test Method 101.03 "Standard Test Method for Determining the Tensile Adhesion Strength of an Exterior Insulation and Finish System (EIFS), Class PB", and **ASTM C 297**– on Parex Exterior Insulation and Finish System (EIFS)/Synthetic Finish 500 Series (Control AC 24 & Post AC 24 Samples), Radco Report #2294:

  Results: the average maximum load of 156.63 pounds, average tensile strength 33.24 psi for Control AC 24 Specimens (with 1" EPS), and the average maximum load of 112.32 pounds, average tensile strength 29.12 psi for Post AC 24 Specimens (with 1" EPS).

- Smoke and flame **ASTM E84** "Standard Test Method for Surface Burning Characteristics Of Building Materials (ANSI 2.5, NFPA 255, UBC 8-1 & UL 723)" on Parex Base Coat and Adhesive 121, Omega Point Report #15473-102198:

  Results: Flame Spread Index = 0 and Smoke Developed Index = 10.

- Smoke and flame **ASTM E84** "Standard Test Method for Surface Burning Characteristics Of Building Materials (ANSI 2.5, NFPA 255, UBC 8-1 & UL 723)" on Parex Synthetic Finishes 500 Series: Swirl Fine 530, Omega Point Report #15473-104781:

  Results: Flame Spread Index = 0 and Smoke Developed Index = 0.

- Intermediate-Scale, Multi-Story fire test per **Uniform Building Code Standard 26-9** "Method of Test for the Evaluation of Flammability Characteristics of Exterior, Nonload-Bearing Wall Assemblies Containing Combustible Components, Omega Point Report # 104898:

  Results: Visual Flame Spread: Surface flames did not exceed a vertical elevation of 10 feet above the top of the window opening. Flames did not spread horizontally more than 5 feet from the centerline of the window opening. Flames did not occur beyond the concrete wall fixture walls based on visual observations of flames spreading over the exterior surfaces of the exterior face, or beyond the intersection of the test wall assembly and the concrete block fixture walls. Flames did not occur in the second floor room.

- Radiant Heat Exposure Test on Parex Standard System with 1-inch thick EPS, in accordance with **NFPA 268**, Omega Point Report #15473-105607:

  Results: test specimen constructed passed the criteria of **NFPA 268**.

- Radiant Heat Exposure Test on Parex Standard System with 121 Base Coat and 6 inch thick EPS, in accordance with **NFPA 268**, Omega Point Report #15473-104905:

  Results: test specimen constructed passed the criteria of **NFPA 268**.

- Transverse load tests on Parex Standard/Water Master System (EIFS) in accordance with **ASTM E330, Procedure B**, "Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference", Radco Report #2877:

  The assembly: nominal 2 x 4 stud grade Spruce_Pine-Fir (SPF) lumber spaced at 16" o.c. with 1-inch thick EPS, Parex Base Coat & Adhesive 121, Parex 355 fiber glass mesh and Parex Synthetic Finish (500 Series). No substrate was used.

  Results: average negative load test 112.84 psi, design load (ultimate/3) = 37.61 psi.

- Freeze thaw testing on Parex Exterior Standard System per ICBO AC24 6.5.2 (EIFS). DPR Synthetic Finishes 500 Series, Qore Property Sciences Job #22021.

- Water Penetration Test per ICBO-ES Acceptance Criteria for Exterior Insulation and Finish Systems (AC24), section 6.10.3 and **ASTM E-331**, "Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference", Radco Report #3121 #3122:

  Results: for both reports, the tested panels successfully passed the two hour evaluation period at 6.24 psf pressure differential.

- One Hour Fire Resistance Test of a recognized one-hour rated nonbearing steel stud wall with Parex EIFS Wall System applied to the exterior surface, in accordance with **ASTM E119**, Omega Point Laboratories, Report #15473-107308:

  One Hour Assembly: the test assembly consisted of a nonbearing wall of 3-5/8" steel studs (20 gage, galvanized) spaced 24" o.c., attached to top and bottom 20 gage galvanized steel runners with No. 6 x 1/2" pan framing screws on each side. Interior surface of stud framework is clad with 5/8" Type X FR gypsum wallboard (US Gypsum Firecode, Type X). Vertically, attached with No. 6, 1-1/4" self-tapping, Bugle Phillips Head drywall screws spaced 8" o.c. along the perimeter and 12" o.c. on all intermediate studs. All vertical joints are staggered 24" o.c. with those on the other side. Finish the interior surface by applying paper tape with joint compound over all joints and exposed screw heads. The exterior surface framework is clad with a single layer of 5/8" Type X FR gypsum wallboard (US Gypsum Firecode, 5/8" x 48" x 120" Type X), installed identically to the interior surface. No joint or screw head treatment to the exterior side sheathing. Stud cavities not insulated.

  EIFS on the exterior side: Parex 355 Mesh (4.5 oz. Per square yard fiberglass mesh) applied to the wallboard around the wall perimeter, also back-wrap around the EPS. Fasten Parex 355 Mesh to wallboard with common tacker staples before applying Parex 121 Base Coat/Adhesive to hold the mesh flat. Four inch thick EPS insulation (1 pcf) adhered with Parex 121 Base Coat/Adhesive, using 5/16" notched trowel. The EPS panels marked with the following stamps: "UL Classified, AFM ", "Type I EPS", "NES NER-551", "U 25". Parex 121 Base Coat/Adhesive mixed 1:1 by weight with Portland Cement. Water added to achieve workable consistency. The base coat is trowel-applied over the insulation board to a nominal 1/16" wet film thickness and the Parex 355 Mesh is embedded in the base coat and allowed to dry overnight. Parex 500 Finish (sand Fine) is applied using trowels with an approximate coverage rate of 150 sq. ft. per bucket.

Results: The wall assembly constructed and tested achieved a fire resistance rating of 60 minutes from either side when tested in accordance with **ASTM E119** "Standard Test Method for Building Construction and Materials as a nonbearing wall assembly. The Parex EIF system demonstrated that it will not negatively affect the fire endurance rating of a standard one-hour fire resistant wall assembly (based on UL Design No. U419) when the fire is applied to either surface of the wall.

- Two Hour Fire Resistance Test of a recognized two-hour rated nonbearing steel stud wall with Parex EIFS Wall System applied to the exterior surface, in accordance with **ASTM E119**, Omega Point Laboratories, Report #15473-107382:

  Two Hour Assembly: the test assembly consisted of a nonbearing wall of 3-5/8" steel studs (20 gage, galvanized) spaced 24" o.c., attached to top and bottom 20 gage galvanized steel runners with No. 6 x 1/2" pan framing screws on each side. Each surface of stud framework is clad with two layers of 5/8" Type X FR gypsum wallboard (US Gypsum Firecode, Type X). The first layer on each side of the stud framework, a single board, fastened using No. 6, 1-1/4" self-tapping, Bugle Phillips Head drywall screws spaced 16" o.c. at the stud locations and 12" o.c. along the top and bottom runners. The second layer on each side of the wall consisted of (2) boards with a vertical joint over the intermediate stud. The second layer on the interior surface is mounted using No. 6 x 1-7/8" self-tapping, Bugle Phillips Head drywall screws spaced 16" o.c. at the stud locations and 12" o.c. along the top and bottom runners. The second layer on the exterior surface is mounted using No. 6 x 1-7/8" self-tapping, Bugle Phillips Head drywall screws spaced 8" o.c. along the studs and runners. Paper tape and joint compound are applied to the joints and screw heads on the out side layer of the interior surface only. No paper tape or joint compound is applied to the exterior surface prior to installation of the EIF system. Stud cavities not insulated.

  EIFS on the exterior side: Parex 355 Mesh (4.5 oz. Per square yard fiberglass mesh) applied to the wallboard around the wall perimeter, also back-wrap around the EPS. Fasten Parex 355 Mesh to wallboard with common tacker staples before applying Parex 121 Base Coat/Adhesive to hold the mesh flat. Four inch thick EPS insulation (1 pcf) adhered with Parex 121 Base Coat/Adhesive, using 5/16" notched trowel. The EPS panels marked with the following stamps: "UL Classified, AFM ", "Type I EPS", "NES NER-551", "U 25". Parex 121 Base Coat/Adhesive mixed 1:1 by weight with Portland Cement. Water added to achieve workable consistency. The base coat is trowel-applied over the insulation board to a nominal 1/16" wet film thickness and the Parex 355 Mesh is embedded in the base coat and allowed to dry overnight. Parex 500 Finish (sand Fine) is applied using trowels with an approximate coverage rate of 150 sq. ft. per bucket.

  Results: The wall assembly constructed and tested achieved a fire resistance rating of 120 minutes from either side when tested in accordance with **ASTM E119** "Standard Test Method for Building Construction and Materials as a nonbearing wall assembly. The Parex EIF system demonstrated that it will not negatively affect the fire endurance rating of a standard two-hour fire resistant wall assembly (based on UL Design No. U419) when the fire is applied to either surface of the wall.

- Three Hour Fire Resistance Test of a recognized three-hour rated nonbearing steel stud wall with Parex EIFS Wall System applied to the exterior surface, in accordance with **ASTM E119**, Omega Point Laboratories, Report #15473-107380:

  Three Hour Assembly: the test assembly consisted of a nonbearing wall of 3-5/8" steel studs (20 gage, galvanized) spaced 24" o.c., attached to top and bottom 20 gage galvanized steel runners with No. 6 x 1/2" pan framing screws on each side. The interior surface of stud framework is clad with three layers of 5/8" Type X FR gypsum wallboard (US Gypsum Firecode, Type X). The first layer

was fastened to the stud framework using No. 6, 1-1/4" self-tapping, Bugle Phillips Head drywall screws spaced 24" o.c. along the perimeter and intermediate studs. The joints between the boards on the second layer were offset 24" from the first layer. The second layer is fastened to the studs using No. 6 x 1-7/8" self-tapping, Bugle Phillips Head drywall screws spaced 24" o.c., offset from the screws on the first layer by 12". The third layer is oriented identically to the first layer, fastened using No. 6 x 2-1/2" self-tapping, Bugle Phillips Head drywall screws spaced 12" o.c. Paper tape and joint compound is applied to the joints and screw heads on the outside layer only. The exterior surface of the framework is also covered with three layers of 5/8" Type X FR gypsum wallboard, mounted identically to the interior side of the wall. No paper tape or joint compound is applied to the exterior surface prior to installation of the EIF system. Stud cavities not insulated.

EIFS on the exterior side: Parex 355 Mesh (4.5 oz. Per square yard fiberglass mesh) applied to the wallboard around the wall perimeter, also back-wrap around the EPS. Fasten Parex 355 Mesh to wallboard with common tacker staples before applying Parex 121 Base Coat/Adhesive to hold the mesh flat. Four inch thick EPS insulation (1 pcf) adhered with Parex 121 Base Coat/Adhesive, using 5/16" notched trowel. The EPS panels marked with the following stamps: "UL Classified, AFM ", "Type I EPS", "NES NER-551", "U 25". Parex 121 Base Coat/Adhesive mixed 1:1 by weight with Portland Cement. Water added to achieve workable consistency. The base coat is trowel-applied over the insulation board to a nominal 1/16" wet film thickness and the Parex 355 Mesh is embedded in the base coat and allowed to dry overnight. Parex 500 Finish (sand Fine) is applied using trowels with an approximate coverage rate of 150 sq. ft. per bucket.

Results: The wall assembly constructed and tested achieved a fire resistance rating of 180 minutes from either side when tested in accordance with **ASTM E119** "Standard Test Method for Building Construction and Materials as a nonbearing wall assembly. The Parex EIF system demonstrated that it will not negatively affect the fire endurance rating of a standard three-hour fire resistant wall assembly (based on UL Design No. U419) when the fire is applied to either surface of the wall.

The one-, two, and three-hour assemblies detailed above may have optional batts or blankets placed in the stud cavities in accordance with UL Design No. U419.

The above test data is on file with the department.

LIMITATIONS OF APPROVAL

The limitations below are applicable to the **UDC** Uniform Dwelling Code (for 1 & 2 family dwellings); the **Comm** Building Code Applicable to Projects Submitted for Review Prior to July 1, 2002; and the **IBC Wisconsin Amended ICC 2000 Code (effective 7/01/02):**

- The Parex exterior insulation system (EIFS) is a nonstructural exterior wall system.
- The construction documents will contain details of the methods used to maintain the weather tightness of all penetrations, and signed and sealed by a registered professional as described in the codes.
- The above codes require exterior wall coverings to be weather-resistant, resisting both wind and rain. Corrosion-resistant flashing shall be provided at the top and sides of all exterior windows and doors and installed in such a manner as to make the opening leak proof. Flashing shall also be installed at all intersections and under windowsills to prevent water intrusion behind the wall veneer.
- The foam plastic insulation board shall be separated from the building interior by ½-inch gypsum wallboard or an equivalent approved thermal barrier material.

- Cement, sand aggregate, retarders, accelerators, fillers, anti-freeze agents or other additives shall not be added to any Parex exterior insulation system (EIFS) products, except as specifically referenced in this evaluation.
- The maximum thickness of foam plastic shall is limited to 4 inches for the one-, two, and three-hour assemblies, and 6 inches elsewhere. The minimum thickness shall not be less than 1-inch.
- The EIF System shall be installed in accordance with the manufacturer's installation instructions, Parex Water Master System Application Guide, and subject to the limitations of this evaluation. The installation instructions shall be available at the job site at all times.

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The additional **IBC** limitations below are in accordance with the current **Wisconsin Amended ICC 2000 Code (effective 7/01/02):**

- The foam plastic insulation board shall bear a label in accordance with **s. IBC 1703.5** containing the following information: 1) Nominal Density, 2) Raw Material Type, 3) Molder's Name and 4) Molder's Third Party Labeling Agency.
- When required, exterior walls shall be fire-resistance rated as required by **IBC Chapter 7**, in accordance with **s. IBC 1403.5**.

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This approval will be valid through December 31, 2007, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Building Product Evaluation number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Revision Date:
Approval Date: September 25, 2002 By: _____

Lee E. Finley, Jr.
Product & Material Review
Integrated Services Bureau

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